labelling the sums of the convolution values accumulated from the respective images, as at **234**, and the sums then are sorted in rank order by value at **235**. From that point on, the decoding process essentially is the same as the previously described version of this type of decoding.

Conclusion

In view of the foregoing, it will now be understood that the present invention provides self-clocking glyph shape codes, including codes that have a pleasing printed appearances and substantial tolerance to image degradation and distortion. It also will be apparent that such codes can be regenerated as desired. Furthermore, it will be evident that such codes can be decoded using a variety of different decoding techniques, including decoding processes that adaptively scale themselves for the decoding of spatially periodic codes of different spatial periodicities.

What is claimed:

1. A method for storing digital values of predetermined bit length, n, in a machine readable format on a hardcopy recording medium, said method comprising the steps of

encoding each of said digital values in a corresponding one of 2^n physically distinct, distinctive, rotationally variant, substantially equal surface area, individually discriminable glyph shapes to generate a set of mutually independent glyph shapes that vary in accordance with said digital values, and

writing said set of glyph shapes on said recording medium in a predetermined logical order and in accordance with a predetermined spatial formatting pattern for storing said digital values in a self-clocking code.

2. The method of claim **1** wherein

said digital values are single bit values, and

said glyph shapes are elongated along axes that are tilted at angles of approximately plus and minus 45° with respect to a reference axis for distinguishing different ones of said digital values from each other.

3. The method of claim **2** wherein

said reference axis extends substantially horizontally with respect to said recording medium.

4. A method for storing digital values of predetermined bit length, n, in a machine readable format on a hardcopy recording medium, said method comprising the steps of

encoding each of said digital values in a corresponding one of 2^n distinctive, rotationally invariant, substantially equal surface area, individually discriminable glyph shapes to generate a set of mutually independent glyph shapes that vary in accordance with said digital values, and

writing said set of glyph shapes on said recording medium in a predetermined logical order and in accordance with a predetermined spatial formatting pattern for storing said digital values in a self-clocking code.

5. The method of any of claims **1–4** wherein

said glyph shapes are defined by respective two dimensional pixel arrays of predetermined size, each of which contains a predetermined number of ON pixels and a predetermined number of OFF pixels, and

said spatial pattern is spatially periodic.

6. The method of claim **5** wherein

said pixel arrays are written on said recording medium in spatially abutting relationship, such that said code has a generally uniform, textured appearance.

7. The method of any of claims **1–4** wherein

said glyph shapes are of substantially uniform macroscopic appearance, and

said spatial pattern is spatially periodic.

8. The method of claim **7** wherein

said glyph shapes are written on said recording medium at a sufficiently high spatial density to impart a generally uniform, textured appearance to said code.

* * * * *

9. A method for storing digital values of predetermined bit length, n, in a machine readable format on a hardcopy recording medium, said method comprising:

encoding each of said digital values in a corresponding one of 2^n physically distinct, distinctive, substantially equal surface area, individually discriminable glyph shapes to generate a set of mutually independent glyph shapes that vary in accordance with said digital values; and

writing said set of glyph shapes on said recording medium in a predetermined logical order and in accordance with a predetermined spatial formatting pattern for storing said digital values in a self-clocking code.

10. The method of claim 9, wherein said glyph shapes are defined by respective two dimensional pixel arrays of predetermined size, each of which contains a predetermined number of ON pixels and a predetermined number of OFF pixels, and said spatial pattern is spatially periodic.

11. The method of claim 10, wherein said pixel arrays are written on said recording medium in spatially abutting relationship, such that said code has a generally uniform, textured appearance.

12.. The method of claim 9, wherein said glyph shapes are of substantially uniform macroscopic appearance, and said spatial pattern is spatially periodic.

13. The method of claim 12, wherein said glyph shapes are written on said recording medium at a sufficiently high spatial density to impart a generally uniform, textured appearance to said code.

14. The method of claim 13, wherein said glyph shapes are of substantially uniform macroscopic appearance, and said spatial pattern is spatially periodic.

15. A method for storing digital values of predetermined bit length, n, in a machine readable format on a hardcopy recording medium, said method comprising:

providing a hardcopy record, said hardcopy recording medium being encoded with a self-clocking code composed of spatially distributed glyphs that are written on said recording medium in a predetermined logical order in accordance with a predetermined spatial pattern for encoding digital values of predetermined bit length, n, in the respective glyphs, said glyphs conforming to selected ones of 2^n physically distinct, distinctive, substantially equal surface area, individually discriminable glyph shapes; and

copying said machine readable code on said hardcopy recording medium onto another hardcopy recording medium.

16. The method of claim 15, wherein said glyph shapes are rotationally variant.

17. The method of claim 15, wherein said glyph shapes are rotationally invariant.

18. The method of claim 15, wherein said glyph shapes are defined by respective two dimensional pixel arrays of predetermined size, each of which contains a predetermined number of ON pixels and a predetermined number of OFF pixels, and said spatial pattern is spatially periodic.

19. The method of claim 18, wherein said pixel arrays are written on said recording medium in spatially abutting relationship, such that said code has a generally uniform, textured appearance.

20. The method of claim 15, wherein said glyph shapes are of substantially uniform macroscopic appearance, and said spatial pattern is spatially periodic.

21. The method of claim 20, wherein said glyph shapes are written on said recording medium at a sufficiently high spatial density to impart a generally uniform, textured appearance to said code.

22. A glyph code reader, comprising:

a scanner for scanning images on a hardcopy recording medium; and

a processor for isolating a glyph code image from the scanned images, said glyph code image comprising glyph shapes storing digital values of predetermined bit length, n, in a machine readable format, in a self-clocking code, said glyph shapes being written on said recording medium in a predetermined logical order and in accordance with a predetermined spatial formatting pattern, each of said digital values being encoded in a corresponding one of 2^n physically distinct, distinctive, substantially equal surface area, individually discriminable glyph shapes to generate a set of mutually independent glyph shapes that vary in accordance with said digital values, and for converting the glyph shapes into the digital values.

23. The reader of claim 22, wherein said glyph shapes are rotationally variant.

24. The reader of claim 22, wherein said glyph shapes are rotationally invariant.

25. The reader of claim 22, wherein said glyph shapes are defined by respective two dimensional pixel arrays of predetermined size, each of which contains a predetermined number of ON pixels and a predetermined number of OFF pixels, and said spatial pattern is spatially periodic.

26. The reader of claim 25, wherein said pixel arrays are written on said recording medium in spatially abutting relationship, such that said code has a generally uniform, textured appearance.

27. The reader of claim 22, wherein said glyph shapes are of substantially uniform macroscopic appearance, and said spatial pattern is spatially periodic.

28. The reader of claim 27, wherein said glyph shapes are written on said recording medium at a sufficiently high spatial density to impart a generally uniform, textured appearance to said code.